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SUMMARY OF WATER QUALITY STANDARDS FOR THE INTERSTATE WATERS OF NEW MEXICO

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NEW MEXICO

WATER QUALITY STANDARDS

SUMMARY

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April 1972

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

NEW MEXICO WATER QUALITY CONTROL COMMISSION

PREFACE

This summary is intended for use by those who have an interest in the water quality standards of the State of New Mexico.

The information contained herein has been summarized from six documents and amendments thereto prepared under the direction of the New Mexico Water Quality Control Commission. These documents, dated June 1967 and subsequent amendments, have been approved as official State and Federal Water Quality Standards by the Administrator of the Environmental Protection Agency* and have the following titles:

1. "Implementation and Enforcement Plan for Water Quality Control in New Mexico."

2. "Water Quality Standards for the San Juan, La Plata, and Animas Rivers in New Mexico."

3. "Water Quality Standards for the Gila and San Francisco River in New Mexico."

4. "Water Quality Standards for the Rio Grande in New Mexico."

5. "Water Quality Standards for the Pecos River in New Mexico."

6. "Water Quality Standards for the Canadian River in New Mexico."

A summarization of this type, of necessity, omits some details. For more detailed information the user should refer to the complete text of the documents cited and amendments thereto or the New Mexico Water Quality Control Commission.

*Prior to December 2, 1970, the Secretary of the Interior.

April 1972

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SUMMARY OF WATER QUALITY STANDARDS FOR THE INTERSTATE WATERS OF NEW MEXICO

INTRODUCTION

Congress authorized the establishment of water quality standards for interstate (including coastal) water by passage of the Water Quality Act of 1965. The purpose of these standards is to protect the public health and welfare and enhance the quality of the Nation's interstate waters to serve a variety of beneficial uses, such as public water supply, recreation, protection of aquatic life, industrial, and agricultural uses. This publication summarizes the standards for the general information of the public and Federal, State, and local officials as to the uses and associated requirements for interstate waterways in New Mexico.

The Act, which amended the Federal Water Pollution Control Act, provided for the States to establish standards for their interstate waters, which were then subject to review and approval by the Secretary of the Interior.* All of the States, the District of Columbia and the Territories of Guam, Puerto Rico, and the Virgin Islands participated in this landmark effort to set standards. In the course of establishing the standards, public hearings were held by the States and other jurisdictions noted above to give the public an opportunity to participate in setting water quality objectives and standards.

New Mexico adopted standards for its interstate waters on June 7, 1967, which were then submitted to the Department of the Interior. Subsequently, certain revisions were made by the State to the original standards, and the Secretary of the Interior approved the standards, as revised on July 9, 1968, with certain exceptions.

At the request of the Secretary of the Interior, New Mexico adopted a policy to protect its high quality interstate waters, and revised all other criteria excepted from approval.

*After December 2, 1970, the Administrator of the Environmental Protection Agency.

The Secretary of the Interior totally approved New Mexico's Water Quality Standards as Federal standards by his letter of August 21, 1969. The approved standards are thus both State and Federal standards. Protection of the standards is achieved under the New Mexico water pollution control statutes, the New Mexico Water Quality Act, and the Federal Water Pollution Control Act, as amended (Section 10). The waters for which standards were adopted are shown on the map in Figure I.

The standards consist of three major components: designations of the uses which interstate waters are to serve, specification of narrative and numerical criteria to protect and enhance water quality, and specification of a plan of implementation and enforcement, which includes treatment and control requirements for municipal, industrial, and other wastes discharged to or affecting interstate waters. These components are discussed in the following sections; all three are essential to a complete standards program.

The standards are now being implemented. However, there will be continuing research on water quality requirements for various beneficial uses and improved collection and evaluation of water quality data. As more information becomes available and experience with implementing the standards is gained the standards will be refined and improved to reflect this new knowledge.

Should more detailed information be required on any aspect of the standards, it may be obtained from the New Mexico Water Quality Control Commission or the Environmental Protection Agency Regional Office in Dallas, Texas. On June 30, 1970, New Mexico established water quality standards for its intrastate waters. Information on these standards may also be obtained from the New Mexico Water Quality Control Commission. Constituent agencies of the New Mexico Water Quality Control Commission are the State Game and Fish Department, the Oil Conservation Commission, the State Engineer Office and Interstate Stream Commission, the State Department of Agriculture, the Parks and Recreation Commission, and the Environmental Improvement Agency. The addresses of these agencies are given on page 29.

WATER USES

All beneficial uses are allowed. Certain reaches are designated for higher standards to protect fishing and recreation. Existing water uses in the State of New Mexico include: agriculture and livestock; municipal and rural domestic uses; fish, wildlife and recreation; industrial and military applications; evaporation from streams, rivers, adjacent uncultivated lands, and stock ponds; transpiration from native vegetation; and nonbeneficial uses, such as, willows, cottonwood trees, and salt cedars. Synoptic use-designations for the interstate waters covered by the New Mexico Standards are provided in Table I.

The general aim in designating uses for particular interstate waters is to recognize present uses and practicable future uses, to provide where possible for a variety of uses. In order to satisfy the intent of the Federal Water Pollution Control Act to enhance water quality, the standards specifically provide that no interstate waters may be used solely or primarily for waste assimilation.

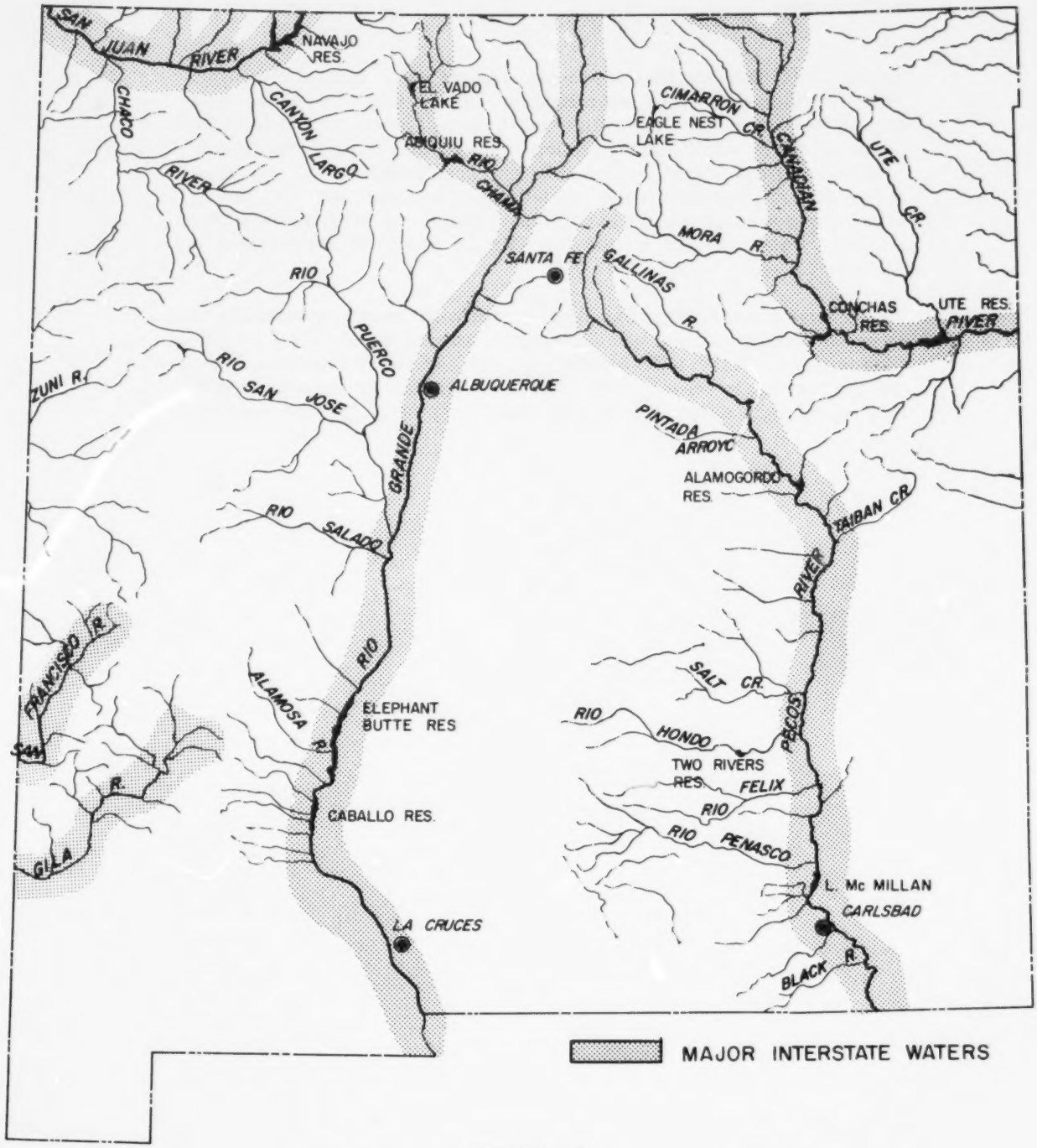
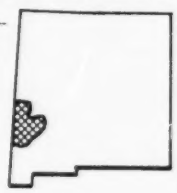


FIGURE I

STATE of NEW MEXICO

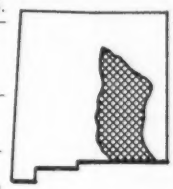
TABLE I

INTERSTATE STREAM	WATER USES						
	PUBLIC WATER SUPPLY	INDUSTRIAL WATER SUPPLY	IRRIGATION	LIVESTOCK	FISH & WILDLIFE PROPAGATION	EVAPORATION - TRANSPIRATION	RECREATION (which may or may not include body contact aquatic sports.)
SAN JUAN RIVER BASIN							
STREAM							
NAVAJO RESERVOIR IN NEW MEXICO	X	X	X	X	X	X	X
THE MAIN STEM OF THE SAN JUAN RIVER FROM NAVAJO DAM DOWNSTREAM TO N. M. HIGHWAY 17 AT BLANCO, NEW MEXICO, & THE MAIN STEM OF THE ANIMAS RIVER FROM THE NEW MEXICO - COLORADO LINE DOWNSTREAM TO U.S. HIGHWAY 550 AT AZTEC, NEW MEXICO, & THE LOS PINOS & NAVAJO RIVERS IN NEW MEXICO.	X	X	X	X	X	X	X
THE MAIN STEM OF THE SAN JUAN FROM N. M. HIGHWAY 17 AT BLANCO, NEW MEXICO DOWNSTREAM TO THE POINT WHERE THE SAN JUAN LEAVES NEW MEXICO & RE-ENTERS COLORADO & THE MAIN STEM OF THE ANIMAS RIVER FROM U.S. HIGHWAY 550 AT AZTEC, NEW MEXICO DOWNSTREAM TO ITS JUNCTION WITH THE SAN JUAN RIVER & THE MANCOS RIVER.	X	X	X	X	X	X	X
GILA RIVER & SAN FRANCISCO RIVER BASIN							
STREAM							
THE MAIN STEM OF THE SAN FRANCISCO RIVER IN NEW MEXICO ABOVE STATE ROAD 12 AT RESERVE, NEW MEXICO, & THE EAST, MIDDLE & WEST FORKS OF THE GILA RIVER FROM THEIR HEADWATERS DOWNSTREAM TO GILA HOT SPRINGS, NEW MEXICO.	X	X	X	X	X	X	X
THE MAIN STEM OF THE SAN FRANCISCO FROM STATE ROAD 12 AT RESERVE, NEW MEXICO DOWNSTREAM TO THE POINT WHERE THE SAN FRANCISCO LEAVES NEW MEXICO & ENTERS ARIZONA, & THE MAIN STEM OF THE GILA RIVER FROM GILA HOT SPRINGS, NEW MEXICO DOWNSTREAM TO WHERE IT LEAVES THE STATE OF NEW MEXICO 	X	X	X	X	X	X	X
RIO GRANDE BASIN							
STREAM							
THE MAIN STEM OF THE RIO GRANDE & THE RIO CHAMA FROM COCHITI DAM * UPSTREAM TO NEW MEXICO-COLORADO LINE AT ALL FLOWS.	X	X	X	X	X	X	X
THE MAIN STEM OF THE RIO GRANDE FROM THE HEAD WATERS OF ELEPHANT BUTTE RESERVOIR UPSTREAM TO COCHITI DAM.*	X	X	X	X	X	X	X
THE MAIN STEM OF THE RIO GRANDE FROM ONE MILE BELOW PERCHA DAM TO THE HEAD WATERS OF ELEPHANT BUTTE RESERVOIR.		X	X	X	X	X	X
THE MAIN STEM OF THE RIO GRANDE FROM THE INTERNATIONAL BOUNDARY & WATER COMMISSION SAMPLING STATION ABOVE AMERICAN DAM AT EL PASO, TEXAS UPSTREAM TO ONE MILE BELOW PERCHA DAM.		X	X	X	X	X	X

* Amended to read "Augostura Diversion Works" by the New Mexico Water Quality Control Commission. Federal approval has been requested.

TABLE I

INTERSTATE STREAM	WATER USES						
	PUBLIC WATER SUPPLY	INDUSTRIAL WATER SUPPLY	IRRIGATION	LIVESTOCK	FISH & WILDLIFE PROPAGATION	EVAPORATION - TRANSPIRATION	RECREATION (which may or may not include body contact aquatic sports.)
PECOS RIVER BASIN							
STREAM							
THE MAIN STEM OF THE PECOS RIVER FROM ANTON CHICO, NEW MEXICO TO THE HEAD WATERS.	X	X	X	X	X	X	X
THE MAIN STEM OF THE PECOS RIVER FROM TANSIL LAKE UPSTREAM TO ANTON CHICO, NEW MEXICO.		X	X	X	X	X	X
FROM HARROUN DAM UPSTREAM TO TANSIL LAKE.		X	X	X	X	X	X
THE MAIN STEM OF THE PECOS RIVER FROM THE NEW MEXICO - TEXAS LINE UPSTREAM TO HARROUN DAM.		X	X	X	X	X	X
CANADIAN RIVER BASIN							
STREAM							
THE MAIN STEM OF THE CANADIAN RIVER FROM THE NEW MEXICO - COLORADO LINE DOWNSTREAM TO TAYLOR SPRINGS & FOR CHICORICA CREEK FROM THE NEW MEXICO - COLORADO LINE DOWNSTREAM TO LAKE ALICE DAM.	X	X	X	X	X	X	X
THE MAIN STEM OF THE CANADIAN RIVER FROM TAYLOR SPRINGS DOWNSTREAM TO THE NEW MEXICO - TEXAS LINE INCLUDING CONCHAS RESERVOIR & UTE LAKE.	X	X	X	X	X	X	X



WATER QUALITY STANDARDS

The protection of water quality and uses requires the establishment of numerical and narrative limits on pollutants which damage these uses. Numerical standards are used wherever it is necessary or reasonable to do so. However, narrative standards are used in some cases, particularly with respect to aesthetic considerations.

Stream standards are established for the purpose of protecting the quality of the surface waters of the State of New Mexico. The standards specified for the various streams are intended to accomplish the following:

1. to provide as high a quality of water as practicable for beneficial uses.

2. to preclude pollution of the stream, and in this fashion to enhance the quality of the stream.

3. to protect the quality of the water stored in the reservoirs of the stream system.

It should be noted that these standards are stream standards and not effluent standards, as samples taken for the administration of these standards are to be collected at the mid-point of the stream flow at locations a sufficient distance downstream from the point of introduction of a wastewater inflow to provide for reasonable mixing of the stream and the inflowing water. Where stratification exists, other sampling techniques may be employed. Sampling in reservoirs and lakes for the purpose of the standards may be at any point in the body of the water, but not closer than 250 feet from the point of introduction of a water contaminant. A reservoir or lake is considered to include all of the area flooded when the water in the basin is at the spillway level.

The appropriation of water in the State of New Mexico is subject to the application of water to beneficial use. The appropriative right to water does not include the right to pollute, but concomitant to use is the degradation of quality to some degree. Thus, inherent with the beneficial use of water is

some deterioration of its quality. Degradation is not considered to be readily preventable by economical treatment methods. For those interstate waters with a higher quality than the minimum levels assigned for protection of water uses, the standards seek to protect this higher quality as much as possible in the face of increasing social and economic development. New Mexico adopted the following provision which was approved November 19, 1968, by the Secretary of the Interior* for the protection of New Mexico's high quality waters:

> Degradation of waters whose existing quality is better than the stream standards established by the New Mexico Water Quality Control Commission, unless justifiable as a result of necessary economic or social development, is not reasonable degradation and is subject to abatement under the authority granted the Commission by the Water Quality Act of 1967. To protect the existing quality of water, the effluent standards established by the Commission under that act will require the highest and best degree of effluent treatment practicable. In implementing this paragraph, the Commission through the appropriate regional offices of the Federal Water Pollution Control Administration will keep the Secretary of the Interior* advised and provided with such information concerning the interstate waters of New Mexico as he will need to discharge his responsibilities under the Federal Water Pollution Control Act (PL 84-660), as amended.

Insomuch as possible, the New Mexico Standards are tailored to present water quality or that quality anticipated to result from installation of high-degree waste treatment facilities. These standards as applied to interstate waters are outlined in Table II.

GENERAL STANDARDS

The following general standards apply to all interstate waters in New Mexico regardless of the magnitude of flow. Detection of an infraction of these standards in a single sample shall be sufficient cause for investigation with the sources of pollution subject to abatement in accordance with regulations of the New Mexico Water Quality Control Commission.

1. Odor and Taste of Fish – Water contaminants shall be limited to concentrations in the receiving water that will not impart unpalatable flavor to fish, or result in offensive odor arising from the stream or otherwise interfere with the reasonable use of the water. Materials of natural origin affecting odor and taste of fish are not subject to this section.

*After December 2, 1970, the Administrator of the Environmental Protection Agency.

2. Floating Solids, Oil and Grease – Receiving waters shall be free of objectionable floating solids, oils, and grease where these materials come from other than natural sources.

3. pH – pH of the receiving water should be within the range 6.6 to 8.6. Sudden fluctuation of pH from that normally found at a particular sampling station shall be subject to study. If these fluctuations of pH are considered to be inimical to beneficial uses, sources of pollution are subject to abatement. Changes attributed to natural causes are not subject to this section.

4. Turbidity – Turbidity of receiving waters shall not reduce light transmission to the point that existing aquatic life in that section of the stream is inhibited or that will cause substantial visible contrast with natural appearance of water. Naturally occurring turbidity caused by silt and suspended sediment or by the reasonable operation of irrigation or flood control facilities are not subject to these regulations.

5. Color – Color of receiving waters should not create an esthetically undesirable condition nor should color impair the use of the water by existing aquatic life with abatement action to be taken only where color is caused by pollution.

6. Bottom Deposits – The stream bottom shall be free of debris and sediment of other than natural origin that will adversely inhibit the growth of normal stream flora and fauna or significantly alter the physical and chemical properties of the bottom.

*7. Toxic substances such as, but not limited to, pesticides, herbicides, heavy metals, and organics, shall not be present in receiving waters in concentrations which will change the ecology of receiving waters to an extent detrimental to man or other organisms of direct or indirect commercial, recreational, or esthetic value. Toxicities of substances in receiving waters will be determined by appropriate bioassay techniques, or other acceptable means, for the particular form of aquatic life which is to be preserved, with the concentrations of toxic materials not to exceed 5% of the 96-hour median tolerance limit; provided that:

   Toxic substances which, through uptake in the aquatic food chain and storage in plant and animal tissues, can be magnified to levels which are toxic to man or other organisms, shall not be present in concentrations which result in this biological magnification.

*Amended to read as shown by the New Mexico Water Quality Control Commission. Federal approval has been requested.

8. Radionuclides – The concentration of radioactivity will be maintained at the lowest practical level. Radionuclides shall not be present in receiving waters in concentrations that are inimical to aquatic life or that will, after conventional drinking water treatment, prevent meeting the U. S. Public Health Service 1962 Drinking Water Standards or be greater than 1/30 of the 168 hour value for other radioactive substances specified in the "National Bureau of Standards Handbook 69."

SPECIAL STANDARDS

In addition to the general standards, special standards have been adopted to protect the waters of New Mexico for both existing and for potential future uses. In addition to the quality characteristics protected by the general standards, the most significant criteria for a fishing water is the dissolved oxygen (DO) concentration. Trout, or cold-water fish, require a higher minimum DO than do warm-water fish. The DO concentration in water is directly dependent upon the water temperature because the solubility of oxygen decreases as the water temperature increases. The biochemical oxygen demand (BOD) is a measure of the organic matter in solution and in suspension in the stream. Thus, the special standards for this purpose differ from one reach to the next, depending upon water temperature and the type of fish life possible. Special standards are also designed to protect the waters of these rivers for their continued use for domestic and municipal supplies and for recreational purposes. Special standards to protect the chemical quality of the water for these same purposes and for irrigation and industrial use are provided.

1. Temperature – Special standards under this section apply at any point on the river's course between the indicated stations at all times. Detection of an infraction of these standards in a sampling period shall be sufficient cause for investigation with the sources of pollution subject to abatement. Deviations from the established special standards as a result of natural causes shall not constitute an infraction of these standards.

    a. For trout producing waters – The temperature of lakes and streams shall not exceed 70 degrees F. The introduction of heat in a stream shall not increase the temperature of the water, as measured above the point of introduction, more than 2 degrees F., provided that this temperature standard shall not apply to impoundments constructed offstream or on ephemeral streams for the purpose of heat disposal.

b. For warm-water fish producing waters – The temperature of lakes and streams shall not exceed 93 degrees F. The introduction of heat in a stream shall not increase the temperature of the water, as measured above the point of introduction, more than 5 degrees F., provided that this temperature standard shall not apply to impoundments constructed offstream or on ephemeral streams for the purpose of heat disposal.

c. Exceptions – Three exceptions to the above temperature criteria and the stream reach they cover are listed below:

(1) For the main stem of the Pecos River from the New Mexico-Texas line upstream to Anton Chico, New Mexico. The temperature of lakes and streams shall not exceed 93 degrees F. The introduction of heat in a stream shall not increase the temperature of the water, as measured above the point of introduction, more than 5 degrees F.; provided, however, that in the reach from Tansil Lake to Harroun Dam the introduction of heat in the stream may increase the temperature of the water, as measured above the point of introduction by not more than 9 degrees F. These standards apply at all flows.

(2) For the main stem of the Rio Grande from the headwaters of Elephant Butte Reservoir upstream to Cochiti Dam.* Temperature of receiving waters should not be such so as to render the water unsuitable for beneficial use nor should the temperature of the receiving water be increased so as to result in a water pollution condition. These standards apply to all flows.

(3) For the main stem of the Rio Grande from the International Boundary and Water Commission sampling station above American Dam at El Paso, Texas upstream to one mile below Percha Dam. Temperature of receiving waters should not be such so as to render the water unsuitable for beneficial use nor should the temperature of the receiving water be increased so as to result in a water pollution condition. These standards apply to all flows.

*Amended to read "Augostura Diversion Works" by the New Mexico Water Quality Control Commission. Federal approval has been requested.

2. Dissolved Oxygen and Biochemical Oxygen Demand

a. For trout producing waters – Materials in solution and in suspension which exert an oxygen demand, shall not be present in concentrations sufficient to reduce the dissolved oxygen in the stream to 50 percent of the saturation concentration or to 6.0 mg/l, whichever yields the higher value. A lower dissolved oxygen concentration in a single sample will be cause for investigation of the sources of pollution by the Commission, with the source of any pollution subject to abatement.

b. For warm-water fish producing waters – Materials in solution and in suspension which exert an oxygen demand, shall not be present in concentrations sufficient to reduce the dissolved oxygen in the stream to 50 percent of the saturation concentration for longer than 8 hours per 24-hour period for the particular stream conditions or 5.0 mg/l whichever is the higher oxygen concentration. A dissolved oxygen concentration below 4.0 mg/l in a single sample will be cause for investigation of the source, with pollution subject to abatement.

c. Exceptions – The following exceptions apply to the stream reach as shown:

(1) For Navajo Lake – Materials in solution or suspension which exert an oxygen demand shall not be present in any portion of the lake in concentrations sufficient to reduce the dissolved oxygen in the lake as measured in the epilimnion (that region of the lake that extends from the surface to the thermocline and does not have a permanent temperature stratification) to 50 percent of the saturation concentration or to 6.0 mg/l whichever yields the higher value.

(2) For the main stem of the Rio Grande from the head waters of Elephant Butte Reservoir upstream to Cochiti Dam.* Materials in solution and suspension which exert an oxygen demand shall not be present in concentrations which will deplete the dissolved oxygen in the stream to a point that water pollution exists. These standards apply to all flows.

(3) For the main stem of the Rio Grande from the International Boundary and Water Commission sampling station above American Dam at El Paso, Texas upstream to one mile below Percha Dam. The average BOD as determined during any 3-day sampling period shall not exceed 10 mg/l. A 3-day sampling period is three con-

*Amended to read "Augostura Diversion Works" by the New Mexico Water Control Commission. Federal approval has been requested.

secutive days during which samples are collected at 4-hour intervals and composited in proportion to flow into a daily sample which is analyzed for the particular constituent. The average dissolved oxygen concentration in the stream shall not be less than 5.0 mg/l during any one-day sampling period. A one-day sampling period is any 24-hour period during which samples are collected at one-hour intervals for analysis for a particular constituent. This standard applies at times when the flow in the river equals or exceeds 350 cfs at El Paso.

3. Fecal Coliform Bacteria* – Five consecutive daily stream samples collected under similar conditions shall not exceed the values set at designated flows measured in cubic feet per second (cfs) for the stream reach as shown in Table II. It should be noted that geometric average is designated on stream reaches, where body contact recreation uses are to be protected and arithmetic on other stream reaches.

4. Dissolved Ionic Constituents – The Commission will make every practical effort to limit the degree of degradation resulting from an increase in the dissolved ionic constituents of the waters.

   a. Main stem of the San Juan, La Plata, Animas, San Francisco, and Gila Rivers – Reasonable degradation of water quality resulting from beneficial use shall be allowed. The Commission will, however, make every effort to limit the degree of degradation resulting from an increase in the dissolved ionic constituents of the waters within the specific reach. Full consideration will be given to all practical methods within the current technology to limit, control and/or reduce the degree and nature of the deterioration. Future development and utilization of these water resources for expansion of irrigated agriculture, increases in population, and industrial growth will be accompanied by progressive increases in consumptive losses of water and attendant increases in concentration of dissolved solids.

*As determined by any method prescribed in the most current edition of "Standard Methods for the Examination of Water and Wastewater."

b. Rio Grande – Relatively long-term records of chemical analysis are available for six points on the main stem of the Rio Grande in New Mexico, with the principal sources of this information being the U. S. Geological Survey and the International Boundary and Water Commission. These analyses are for a number of constituents but the most important for chemical quality control purposes are the common cations and anions, with chlorides and sulfates usually the principal anion constituents. It will be possible to monitor the river for pollution by establishing standards for these two anions and for total dissolved solids at points along the river for which records are available. At very low flows, the concentration of some of the chemical constituents is quite high and quite variable but these flows represent a relatively small part of the total water supply of the river. To allow for these low flow periods, the standards are not imposed below certain flows. Because of the regulation of the flow of the Rio Grande by dams and reservoirs, the experience at many of the stations is that either relatively high flows exist or that there is virtually no flow.

Special standards for this purpose apply only to samples collected at the station indicated and only for periods during which the monthly average flow equaled or exceeded the indicated minimum. Samples shall be collected and analyzed in a manner similar to that used by the agency which has maintained the indicated station in the past. The Commission will initiate an investigation to determine the source of pollution should the conditions required by the special standards in this section not be met during more than one calendar month in any water year, with any pollution found subject to abatement.

(1) For the main stem of the Rio Grande in New Mexico above the U. S. Geological Survey sampling station at Otowi Bridge. These standards shall not apply during months when the average monthly flow falls below 100 cfs at Otowi Bridge.

(a) Chlorides – The monthly average concentration of chlorides shall not exceed 25 mg/l as determined by chemical analysis of the samples collected at the U. S. Geological Survey gaging station at Otowi Bridge, New Mexico.

(b) Sulfates – The monthly average concentration of sulfates shall not exceed 150 mg/l as determined by chemical analysis of the samples collected at the U. S. Geological Survey gaging station at Otowi Bridge, New Mexico.

(c) Total Dissolved Solids – The monthly average concentration of total dissolved solids shall not exceed 500 mg/l as determined by chemical analysis of the samples collected at the U. S. Geological Survey gaging station at Otowi Bridge, New Mexico.

(2) For the main stem of the Rio Grande from Otowi Bridge downstream to the U. S. Geological Survey sampling station at San Marcial, New Mexico. These standards shall not apply during months when the average monthly flow falls below 100 cfs at San Marcial.

(a) Chlorides – The monthly average concentration of chlorides shall not exceed 250 mg/l as determined by chemical analysis of samples collected at the U. S. Geological Survey gaging station at San Marcial, New Mexico.

(b) Sulfates – The monthly average concentration of sulfates shall not exceed 500 mg/l as determined by chemical analysis of the samples collected at the U. S. Geological Survey gaging station at San Marcial, New Mexico.

(c) Total Dissolved Solids – The monthly average concentration of total dissolved solids shall not exceed 1,500 mg/l as determined by samples collected at the U. S. Geological Survey gaging station at San Marcial, New Mexico.

(3) For the main stem of the Rio Grande from San Marcial downstream to the International Boundary and Water Commission sampling station above American Dam at El Paso, Texas (reported as the Rio Grande at El Paso). These standards shall not apply during months when the average monthly flow falls below 350 cfs at the International Boundary Commission sampling station above American Dam.

(a) Chlorides – The monthly average concentration of chlorides shall not exceed 400 mg/l as determined by chemical analysis of the samples collected by the International Boundary and Water Commission at the El Paso, Texas sampling point.

(b) Sulfates – The monthly average concentration of sulfates shall not exceed 500 mg/l as determined by chemical analysis of the samples collected by International Boundary and Water Commission at their El Paso, Texas sampling point.

(c) Total Dissolved Solids – The monthly average concentration of total dissolved solids shall not exceed 2000 mg/l as determined by chemical analysis of the samples collected by International Boundary and Water Commission at their El Paso, Texas sampling point.

c. Pecos River – There is a general degradation in the chemical quality of water as it is used, or when water is stored for future uses and for recreational purposes; this degradation becoming more noticable as the river proceeds downstream. Special standards to protect the chemical quality must be related to points where sampling stations have been maintained for long periods of time. For this reason the river is divided into separate reaches for special standards related to these characteristics.

Relatively long-term records of chemical analysis are available for five points on the main stem of the Pecos River in New Mexico with the principal source of this information being the U. S. Geological Survey. These analyses are for a number of constituents but the most important for chemical quality control purposes are the common cations and anions, with chlorides and sulfates usually the principal anion constituents. It will be possible to monitor the river for pollution by establishing standards for these two anions and for total dissolved solids at points along the river for which records are available. At very low flows, the concentration of some of the chemical constituents is quite high and quite variable, but these flows represent a relatively small part of the total water supply of the river. Because of its hydrologic nature and because of the regulation of the flows of the Pecos River by dams and reservoirs, the experience at many points on the river is that either relatively high flows exist or that there is virtually no flow in the stream. To allow for these low flow periods, and to protect the quality of the stream at high flows, the standards for chlorides, sulfates, and total dissolved solids have been formulated in terms of mathematical relationships between flow and the concentration of the particular constituent. The special equations for determination of the stream reaches of the Pecos River have been intentionally omitted so as to prevent any misunderstanding. Those people interested in the chlorides, sulfates, and total dissolved solids criteria should contact either the State or Federal agency listed on page 29.

d. Canadian River – Reasonable degradation of water quality resulting from beneficial use shall be allowed. The Commission will, however, make every effort to limit the degree of degradation resulting from an increase in the dissolved ionic constituents of the waters within the specific reach. Full consideration will be given to all practical methods within the current technology to limit, control and/or reduce the degree and nature of the deterioration. Because of recently constructed projects, the uncertain nature of proposed uses and the limited and incomplete basic data concerning total dissolved solids, sulfates, and chlorides suitable predictive values are not available at this time. When suitable answers and data are available, numerical values for total dissolved solids, sulfates, and chlorides will be established.

TABLE II

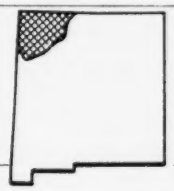
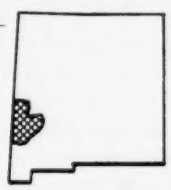
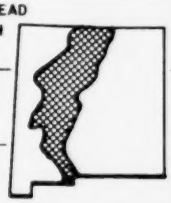
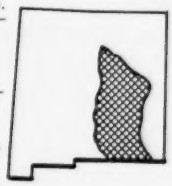
INTERSTATE STREAM	*STANDARDS												
	TEMPERATURE					DISSOLVED OXYGEN	BACTERIA (FECAL COLIFORM)			pH	MINERAL	OTHER
	70°F. MAX.	93° F. MAX.	2°F. MAX. INCREASE	5°F. MAX. INCREASE	9°F MAX. INCREASE	MIN. OF 50% SAT. PROVIDED THE VALVE IS NOT LOWER THAN mg/l.	200/100 ml*** GEOMETRIC AVG.	2,000/100ml ARITHMETIC AVG.	5,000/100 ml ARITHMETIC AVG.	6.6 TO 8.6	SEE NARRATIVE STANDARDS	SEE GENERAL STANDARDS
SAN JUAN RIVER BASIN												
STREAM												
NAVAJO RESERVOIR IN NEW MEXICO	X		X			6.0	X			X	X	X
THE MAIN STEM OF THE SAN JUAN RIVER FROM NAVAJO DAM DOWNSTREAM TO N. M. HIGHWAY 17 AT BLANCO, NEW MEXICO, & THE MAIN STEM OF THE ANIMAS RIVER FROM THE NEW MEXICO - COLORADO LINE DOWNSTREAM TO U.S. HIGHWAY 550 AT AZTEC, NEW MEXICO, & THE LOS PINOS & NAVAJO RIVER IN NEW MEXICO. 	X		X			6.0		X		x	X	X
THE MAIN STEM OF THE SAN JUAN FROM N. M. HIGHWAY 17 AT BLANCO, NEW MEXICO DOWNSTREAM TO THE POINT WHERE THE SAN JUAN LEAVES NEW MEXICO & RE-ENTERS COLORADO & THE MAIN STEM OF THE ANIMAS RIVER FROM U.S. HIGHWAY 550 AT AZTEC, NEW MEXICO DOWNSTREAM TO ITS JUNCTION WITH THE SAN JUAN RIVER & THE MANCOS RIVER.		X		X		5.0			X	X	X	X
GILA RIVER & SAN FRANCISCO RIVER BASIN												
STREAM												
THE MAIN STEM OF THE SAN FRANCISCO RIVER IN NEW MEXICO ABOVE STATE ROAD 12 AT RESERVE, NEW MEXICO, & THE EAST, MIDDLE & WEST FORKS OF THE GILA RIVER FROM THEIR HEADWATERS DOWNSTREAM TO GILA HOT SPRINGS, NEW MEXICO.	X		X			6.0		X		X	X	X
THE MAIN STEM OF THE SAN FRANCISCO FROM STATE ROAD 12 AT RESERVE, NEW MEXICO DOWNSTREAM TO THE POINT WHERE THE SAN FRANCISCO LEAVES NEW MEXICO & ENTERS ARIZONA, & THE MAIN STEM OF THE GILA RIVER FROM GILA HOT SPRINGS, NEW MEXICO DOWNSTREAM TO WHERE IT LEAVES THE STATE OF NEW MEXICO. 		X		X		5.0		X		X	X	X
RIO GRANDE BASIN												
STREAM												
THE MAIN STEM OF THE RIO GRANDE & THE RIO CHAMA FROM COCHITI DAM** UPSTREAM TO NEW MEXICO-COLORADO LINE AT ALL FLOWS.	X		X			6.0	X			X	X	X
THE MAIN STEM OF THE RIO GRANDE FROM THE HEAD WATERS OF ELEPHANT BUTTE RESERVOIR UPSTREAM TO COCHITI DAM.** 	SEE PAGE 11					SEE PAGE 12			X	X	X	X
THE MAIN STEM OF THE RIO GRANDE FROM ONE MILE BELOW PERCHA DAM TO THE HEAD WATERS OF ELEPHANT BUTTE RESERVOIR.		X		X		5.0	X			X	X	X
THE MAIN STEM OF THE RIO GRANDE FROM THE INTERNATIONAL BOUNDARY & WATER COMMISSION SAMPLING STATION ABOVE AMERICAN DAM AT EL PASO, TEXAS UPSTREAM TO ONE MILE BELOW PERCHA DAM.	SEE PAGE 11					5.0		X >350 cfs	X <350 cfs	X	X	X

TABLE II

INTERSTATE STREAM	*STANDARDS												
	TEMPERATURE					DISSOLVED OXYGEN	BACTERIA (FECAL COLIFORM)			pH	MINERAL	OTHER
	70° F. MAX.	93° F. MAX.	2° F. MAX. INCREASE	5° F. MAX. INCREASE	9° F. MAX. INCREASE	MIN. OF 50% SAT. PROVIDED THE VALVE IS NOT LOWER THAN mg/l.	200/100 ml*** GEOMETRIC AVG.	2,000/100 ml ARITHMETIC AVG.	5,000/100 ml ARITHMETIC AVG.	6.6 TO 8.6	SEE NARRATIVE STANDARDS	SEE GENERAL STANDARDS
PECOS RIVER BASIN												
STREAM												
THE MAIN STEM OF THE PECOS RIVER FROM ANTON CHICO, NEW MEXICO TO THE HEAD WATERS.	X		X			6.0	X			X	X	X
THE MAIN STEM OF THE PECOS RIVER FROM TANSIL LAKE UPSTREAM TO ANTON CHICO, NEW MEXICO.		X		X		5.0	X			X	X	X
FROM HARROUN DAM UPSTREAM TO TANSIL LAKE.		X			X	5.0	X			X	X	X
THE MAIN STEM OF THE PECOS RIVER FROM THE NEW MEXICO - TEXAS LINE UPSTREAM TO HARROUN DAM.		X		X		5.0	X			X	X	X
CANADIAN RIVER BASIN												
STREAM												
THE MAIN STEM OF THE CANADIAN RIVER FROM THE NEW MEXICO - COLORADO LINE DOWNSTREAM TO TAYLOR SPRINGS & FOR CHICORICA CREEK FROM THE NEW MEXICO - COLORADO LINE DOWNSTREAM TO LAKE ALICE DAM.	X		X			6.0		X		X	X	X
THE MAIN STEM OF THE CANADIAN RIVER FROM TAYLOR SPRINGS DOWNSTREAM TO THE NEW MEXICO - TEXAS LINE INCLUDING CONCHAS RESERVOIR & UTE LAKE.		X		X		5.0	X			X	X	X



* The General Standards are an integral part of these requirements.

** Amended to read "Angostura Diversion Works" by the New Mexico Water Quality Control Commission. Federal approval has been requested.

*** For waters used for primary (body contact) recreation.

IMPLEMENTATION PLAN

The "action" plan of the standards is the plan of implementation and enforcement. This plan sets forth the requirements for treatment and/or control of all conventional municipal and industrial waste discharges in the State which affect interstate waters, specifies the time within which this is to be accomplished, and contains programs for dealing with other water pollution control problems. All municipal treatment plants have secondary treatment* in New Mexico. All industrial wastes are to receive the equivalent of secondary treatment or control by 1972. Information on the requirements for any particular waste discharge may be obtained from the New Mexico Water Quality Control Commission or one of its constituent agencies. Information concerning waste discharges from facilities for the production refinement and pipeline transmission of oil and gas, or products thereof, is available from the Oil Conservation Commission; the Environmental Improvement Agency administers other waste discharges.

As stated earlier, the New Mexico Water Quality Control Commission is the official water pollution control body for the State with constituent agencies comprised of the State Game and Fish Department, the Oil Conservation Commission, the State Department of Agriculture, the Parks and Recreation Commission, the State Engineer Office and Interstate Stream Commission, and the Environmental Improvement Agency. By legislation, the Water Quality Control Commission consists of the Directors of these constituent agencies and a representative of the public to be appointed by the Governor for a term of four years.

The Water Quality Control Commission does not have a staff, and it has designated general duties to constitute State agencies as follows:

1. The Environmental Improvement Agency – Acts as administrative body for the Commission, keeps the records of the Commission, administers Public Law 660, works with the Environmental Protection Agency as a water pollution control agency, analyzes

*Commonly defined as that process or group of processes capable of removing virtually all floating and settleable solids, generally from 80 to 95 percent of the 5-day biochemical oxygen demand, and a similar level of removal of suspended solids.

samples collected by itself and other agencies, and files water quality data.

2. Department of Game and Fish – Enforces the Water Quality Control Commission Regulations to prevent pollution that affects the game and fish resources of the State.

3. Oil Conservation Commission – Controls pollution from oil and gas production activities.

4. Department of Parks and Recreation – Enforces the Water Quality Control Commission Regulations to prevent pollution from small marinas and boats at State park facilities.

5. State Engineer Office and Interstate Stream Commission – Continue financing of water quality monitoring stations and flow data required by the Commission.

6. Department of Agriculture – Administration of the New Mexico Economic Poison Act, and the New Mexico Pesticide Applicators Law.

The constituent agencies will strive to obtain voluntary compliance with the standards or rules adopted by the Commission. In cases where voluntary compliance is not obtained, the problem is turned over to the Commission for legal action.

Persons making discharges of waste water to the waters of the State are asked and encouraged to monitor their discharge on a regular basis, and to submit routine monitoring reports to the Water Quality Control Commission. This self-monitoring may extend to the receiving waters. Periodic checks on these waste discharges and the receiving waters are made by Field Environmentalists who also submit reports on their findings to the Water Quality Control Commission. Finally, the Water Quality Control Commission makes periodic checks on the waste discharges and the receiving waters.

The program for discharge and receiving stream monitoring may include all or a portion of the following:

1. Municipal Sewage Treatment Plants, 1.0 million gallons per day (mgd), or More – Daily recording of flow, settleable solids, chlorine residual and contact time. Three-time-weekly BOD of the effluent, fecal coliform bacteria concentration in the effluent (membrane filter method), and stream tests above and below the point of discharge (at locations to be specified by the Water Quality Control Commission) to include DO, temperature, fecal

coliform bacteria, and visual observations for sludge deposits, oil, grease, or other floating materials.

2. Municipal Sewage Treatment Plants, Less Than 1.0 mgd – Daily recording of flow, settleable solids, chlorine residual and contact time. Once per week BOD of the effluent, fecal coliform bacteria concentration in the effluent (membrane filter method), and stream tests above and below the point of discharge (at locations to be specified by the Water Quality Control Commission) to include DO, temperature, fecal coliform bacteria, and visual observations for sludge deposits, oil, grease, or other floating materials.

3. Industrial and Irrigation Waste Discharges – Monitoring programs for industrial and irrigation waste discharges will be designed to suit the characteristics of the waste under question. The extent of monitoring programs will correspond to the significance of the discharge and its potential effect on the receiving waters. A generalization of the tests for various types of wastes is tabulated below:

Type Waste	Discharge Tests	Stream Tests
Organic	Flow, BOD, COD, S.S.	DO, Temp., Visual
Mineral	Flow, TDS, Chlorides, SO_4	Flow, TDS, Chlorides, SO_4
Toxic	Flow, 96-hr TLM Others as necessary	Stream Live Boxes Aquarium Studies
Cooling	Flow, Temp.	Flow, Temp., Chem. Anal.
Sand & Gravel	Flow, Turbidity	Turbidity
Oily	Flow, Ether Soluble Materials	Visual for oils

4. Local Health Offices – The Field Environmentalists inspect waste water discharges on a routine basis, and during these inspections make notes on plant operation and run tests or grab samples for analyses. These inspections are made on a weekly or monthly basis depending upon the size and significance of the discharge. Reports summarizing the findings of these inspections and tests are to be submitted by the Environmentalists to the Environmental Improvement Agency.

5. Water Quality Control Commission – Representatives of the Commission make inspections of all waste water discharges on a routine basis, the frequency depending on the size and significance of the discharge and on the need as indicated by monitoring programs, reports of persons making discharges and of Field Environmentalists, Significant discharges are to be inspected at least once a year.

Additional programs for water quality control include, but are not limited to, the following:

1. Agricultural Waste Waters – Agricultural use of water affects stream quality through consumptive use of irrigation return flows containing substantially all of the dissolved ionic constituents originally present in the total flow diverted for irrigation. In addition to such concentration of dissolved solids, irrigation return flows may also contain salts leached from the soil, residue from use of fertilizers and micro-contaminants from the use of pesticides and similar materials.

   Dissolved ionic constituents in irrigation return flows constitute a source of degradation when these waters reach the stream. Economically feasible means of control or enhancement of the quality or irrigation return flows are not currently available. However, the State of New Mexico will cooperate whenever possible with the Federal Government or others in meaningful programs or studies aimed at improving the quality or irrigation return flows.

2. Economic Poisons – Control over the use of economic poisons in New Mexico is in two principal areas. County extension agents carry out a program to aid farmers and ranchers in the proper use of economic poisons, thereby minimizing possible damage to water supplies through misuse of the economic poisons.

   In addition, the New Mexico Department of Agriculture administers two State laws concerning economic poisons. The New Mexico Economic Poison Act requires all economic poisons sold in the State to be registered and approved for use by the New Mexico Department of Agriculture. Before State approval is granted, the economic poison must be registered and approved by the U. S. Environmental Protection Agency. The Act also requires proper labeling regarding use, application, precautions, and container disposal.

The New Mexico Pesticide Applicators Law requires all commercial applicators of pesticides to take a test demonstrating their knowledge and ability to properly use pesticides. The law provides that the applicators must be bonded. The New Mexico Department of Agriculture grants and revokes licenses to the applicators under the terms of the law.

3. Fertilizers – County extension agents carry out a program to aid farmers and ranchers in the proper use of fertilizers. One goal of this program is to reduce the quantities of fertilizers reaching surface waters, thereby reducing nutrient enrichment of these waters.

   In addition, the New Mexico Department of Agriculture administers the New Mexico Fertilizer Act which requires that substances sold to promote plant growth must be registered with the State. Fertilizers must be properly labeled as to content.

4. Land Erosion – In New Mexico, one of the principal problems of water quality is that associated with land erosion. During periods of high runoff, eroding land contributes to sedimentation of streams with consequent high suspended solids content and turbidity. A number of State and Federal agencies have active programs to control land erosion and stream sedimentation. These programs employ a wide variety of land treatment and management practices. Some of these methods include grass seeding; brush control to reduce competition with soil holding grasses; soil stabilization through ripping, furrowing, and check dams; prevention of destructive grazing, including fencing; reforestation; detention dams for controlled releases of runoff water; gully dikes; small watershed dams; terracing; and bank protection and stabilization.

5. Other programs to improve water quality include:

   a. Malaga Bend Project – Approximately 20 miles south of Carlsbad, several natural springs add brine to the Pecos River. This project consists of pumping brine from the underground formation into an evaporation pond to reduce the brine inflow to the river.

b. Oil and Gas Field Pollution Control – The Oil Conservation Commission is responsible for administering State laws, rules and regulations regarding the prevention of water pollution which might be a result of oil and gas operations.

c. Pollution Affecting Game and Fish – The State Game Commission and Department of Game and Fish are responsible for the protection and enhancement of wildlife and their habitat, especially the waters of the State.

DEFINITION OF TERMS

For the purposes of these standards, the terms employed are to be interpreted in light of their context in the standards and their most obvious implication, unless otherwise specifically defined in the text. The following terms have been given more specific definitions:

1. Pollution – Water pollution means introducing or permitting the introduction into water, either directly or indirectly, of one or more water contaminants in such quantity and of such duration as will with reasonable probability injure human health, animal or plant life, or property, or to unreasonably interfere with the public welfare or the use of property.

2. Water Contaminant – Water contaminant means any substance which alters the physical, chemical or biological qualities of water.

3. Wastes – Wastes means sewage, industrial wastes or any other liquid, gaseous or solid substance which will pollute any waters of the State.

4. Degradation – Degradation is used to describe the deterioration of water quality which results through beneficial uses, but which is not readily preventable by economical treatment methods.

5. Treatment Works – Treatment works means any plant or other works for the purpose of treating, stabilizing or holding wastes.

6. Conventional Waste – Water Treatment – Conventional wastewater treatment means one of the many economically feasible waste-water treatment techniques which have been evolved through engineering practice.

7. Natural – Natural means not resulting from man's activities.

8. Dissolved Ionic Constituents – This term is used to imply the filterable inorganic substances dissolved in water. For practical purposes, it is taken to be equivalent to the total dissolved solids

content of a water as determined by the filterable residue test described in the most current edition of "Standards Methods for the Examination of Water and Wastewater."

9. Sampling Period – A sampling period is the time interval specified in the language of a particular standard over which samples are to be collected for analysis for the detection of an infraction of the particular standard.

10. BOD – 5-day, 20 degrees C. biochemical oxygen demand in mg/l as determined by the dilution bottle technique described in the most current edition of "Standard Methods for the Examination of Water and Wastewater," published by the American Public Health Association.

11. DO – Dissolved oxygen concentration in mg/l as determined by the unmodified Winkler technique as described in the most current edition of "Standard Methods for the Examination of Water and Wastewater," or by an appropriate modification of the Winkler method as described in that text.

12. Membrane filter technique – A method used to determine the number of bacteria in a unit volume of water or wastewater; for techniques, see the most current edition of "Standard Methods for the Examination of Water and Wastewater."

13. mg/l – Milligrams per liter; equivalent to parts per million (ppm) for waters with a specific gravity of one.

14. Main Stem of the Rio Grande – The main Rio Grande channel from the International Boundary and Water Commissions sampling station above the American Diversion Dam at El Paso, Texas, upstream to where the Rio Grande crosses the New Mexico-Colorado line. The term main stem does not include diversion canals or drain ditches, but does include the flow in the Rio Grande in conveyance channels.

15. Monthly Average Concentration – The monthly average concentration is the mean value of analytical values obtained for samples

collected during any calendar month when samples representative of each day of the month have been collected and analyzed.

16. Monthly Flow Weighted Average Concentration – The monthly flow weighted average concentration is determined from monthly composites made by taking from each independent water sample an amount of water volumetrically proportional to the river flow represented by that sample.

STATE AND FEDERAL AGENCY ADDRESSES

A. STATE

New Mexico Water Quality Control Commission
P. O. Box 2348
Santa Fe, New Mexico 87501

Environmental Improvement Agency
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Santa Fe, New Mexico 87501

State Engineer & Interstate Stream Commission
Bataan Memorial Building
State Capitol
Santa Fe, New Mexico 87501

Department of Game and Fish
Villagra Building
State Capitol
Santa Fe, New Mexico 87501

Oil Conservation Commission
Land Office Building
Santa Fe, New Mexico 87501

Department of Agriculture
c/o New Mexico State University
Las Cruses, New Mexico 88001

State Parks and Recreation Commission
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B. FEDERAL

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